

Saltstone

Tour Script

Main Parking Lot

This is the Saltstone facility. Here, low level liquid waste is received from the H-area Tank Farm through an underground transfer line. That waste is combined with dry materials to form a grout. The grout, while in liquid form, is transferred to storage vaults for permanent disposal. Although Saltstone is managed and staffed as a single facility, it is technically divided into two separate facilities. The Saltstone Production Facility receives the waste, mixes it with dry materials, and transfers it to the vaults. The Saltstone Disposal Facility consists of the vaults used for permanent storage of the solidified grout. This tour will address the production facility first. We will now move through the administrative building and continue the brief.

Near picnic tables to the east Silos (facing silos)

Dry grout is a mixture of powdered fly ash, slag, and Portland cement. The four identical silos behind me are used to separately store the three components with the fourth silo being used as a spare. Each silo can hold approximately 18,000 cubic feet of material. Tankers of dry material arrive at the facility and use their blowers to force it to the top of

1 the respective silo. When needed for processing, the components are weighed, one at a
2 time, in the weigh hopper below the silos. The weighed material drops from the weigh
3 hopper to the blend tanks where air is used to thoroughly mix it. There are two blend
4 tanks which allow the material to be transferred from one while the other is being filled.
5 The compressors seen here supply the air used to agitate the materials in the silos, mix
6 dry material in the blend tanks, and transfer the mixed material to the Premix Feed Bin.

7
8 **Roadway south of 210-Z (facing building)**

9
10 Once the dry material is blended, air is used to blow it through the transfer line, that
11 green pipe that comes up along the fence, (*point out green vertical pipe next to admix*
12 *tank*) to the top of the Premix Feed Bin (*point out*), which has a 50 ton capacity. The
13 bulk of the mixed dry feed is stored there until needed. What can't be seen below the
14 Premix Feed Bin is a second weigh hopper that measures the amount of dry feed being
15 used and the two screw feeders. The screw feeders are controlled by variable speed
16 drives and are used in conjunction with the weigh hopper to provide the correct ratio of
17 dry feed relative to the volume liquid waste being processed.

18
19 *Point out concrete wall 201-Z*

20 Behind that wall are the two processing tanks used at the facility. The larger tank is the
21 50,000 gallon clean cap batch tank. It is used to support grout processing with clean
22 water. This clean grout will serve as a cap on the grout made from waste for additional
23 radiation shielding. The primary tank is the 6,500 gallon Salt Feed Tank. This tank

1 receives the liquid waste from the H-Area Tank Farm and leachate from the vaults.
2 Leachate is the residual liquid that remains after grout solidification. Both tanks are in a
3 covered concrete enclosure to contain leaks. The tanks are supported with level/density
4 instrumentation, agitators, transfer pumps and a ventilation system. During processing,
5 as liquid waste is received in the salt feed tank, it is simultaneously being transferred out
6 of the tank for grout production.

7
8 *Point out hut west of concrete wall*

9 Within the hut next to the tanks are the metering stations. Additives to retard grout
10 setting and foaming are metered into the liquid feed. This out of service tank (*next to*
11 *fence*) is no longer used since the additives are separate and a very low volume is
12 required.

13
14 Due to the size of the tour and the facility requirements, visiting every section of the
15 facility is not feasible. Therefore, before we move through the building I will explain
16 what to expect.

17
18 To the right will be the compressor room which houses two compressors. One is for
19 process air and instrument air. The second compressor is for the pig launch systems.
20 This system uses the compressed air to force a rubber ball, called a pig, through the grout
21 line from the process room to the vault. A pig is launched prior to processing to ensure
22 the transfer line is clear and a second pig is launched after processing to assist in the
23 removal of residual grout from the line.

1

2 To the left is a small maintenance area with limited machining capability.

3

4 You will pass a small electrical control room and electronics shop.

5

6 You will then see the distributed control system (DCS) input/output (I/O) cabinet room
7 and the control room. The process room is on the other side of the far windows of the
8 control room, but it can't be seen due to shielding.

9

10 Although some controls are local, most of the processing and monitoring operations are
11 conducted in the facility's only control room. The DCS is used to control, monitor, and
12 record system parameters. In the control room, there are two identical operator stations
13 for controlling the mixing and transferring activities. There are two additional control
14 panels for the dry feed handling. Video monitors are used to display live pictures of
15 certain areas of the facility. The DCS stations and video monitors can be seen through
16 the control room window when we pass through.

17

18 In the process room, the dry material from the screw feeders is combined with the liquid
19 waste in a mixer. The mixer typically combines 32-35 tons per hour of dry material with
20 90-95 gallons per minute of liquid waste. It uses dual screws to mix the material and
21 drive it to the hopper. The hopper is a 110 gallon in-process container that holds the
22 grout until it is pumped to the vault. The grout pump is rated up to 180 gallons per
23 minute. The pump's speed is controlled by a variable speed drive which makes

1 adjustments to maintain a certain level in the grout hopper. After processing is
2 completed, the system is flushed using the salt feed and process water. The flushes are
3 followed by launching a pig to ensure the grout transfer line is clear.

4
5 To remove and install the larger pieces of equipment, there is an overhead crane in the
6 process room.

7
8 Remote cameras are used to view the process room, the salt feed tank area, the interior of
9 the vault 4 cells and inside of the grout hopper. With the exception of the two in the
10 hopper, cameras can be remotely panned and zoomed from the control room. All
11 cameras are linked to the video monitors in the control room. We will now move through
12 the building and you will be able to see some of the items things I just spoke of.

13
14 **Move through 210-Z**

15
16 **Main parking lot**

17
18 Production facility supporting equipment and information that wasn't addressed earlier
19 includes the following:

20
21 Electrical power is provided from S-area with a back-up uninterruptible power supply
22 and diesel generator for critical loads. The main transformers and load center are located
23 in the building next to the diesel generator. (*Point out*)

1

2 The facility has a halon based fire protection system for electrical areas and a water based
3 system for the general working areas. The water system includes a water tank and two
4 parallel pumps, one electrical and one supported by the fire system diesel generator. That
5 large tank and building support the fire water system.

6

7 The process water system uses water from the sites domestic water supply. It is stored in
8 that tank (*point out*) and local pumps are used to increase the pressure for the facility's
9 processing needs.

10

11 The facility is being staffed for coverage 12 hours a day, 7 days a week.

12

13 **Move to E side of lot nearest to Vault 4**

14

15 The disposal portion of the facility is currently made up of 2 vaults. The first vault (point
16 out) consists of 6 cells. Each cell is 100' x 100' x 25'. Three are full and capped with
17 concrete roofs that were poured after the cells were filled. The other three cells are
18 planned for failed equipment disposal.

19

20 The second vault was built to a different design with 12 cells 100' x 100' x 27'. Concrete
21 roofs are passively vented and installed as part of construction. Some of the cells have a
22 leachate system. The leachate system includes permeable material that partially lines the
23 interior walls of the cell and is connected to a collection line inside of cell. The

1 collection line is tied to an exterior piping and pumping system that moves the collected
2 material back to the production facility. The smaller line in the raceway from the top of
3 the vault is the leachate system piping. The larger white line going up the side of the
4 vault is the grout transfer line. Some of the cells are being upgraded with new
5 temperature monitoring, flammability monitors, and active ventilation systems. Future
6 vaults are being designed and built.
7
8 That concludes the tour.